UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/522,723	09/20/2005	Remi Jacques	264521US0PCT	8532

22850 7590 06/02/2010

OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER	
ROYSTON, ELIZABETH	

ART UNIT	PAPER NUMBER
1791	

NOTIFICATION DATE	DELIVERY MODE
06/02/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary	Application No.	Applicant(s)	
	10/522,723	JACQUES ET AL.	
	Examiner	Art Unit	
	Elizabeth Royston	1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 April 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,6-13 and 19-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,6-13 and 19-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *5/21/2010*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application.
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/21/2010 has been entered.

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422

F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1-3, 6-11, 13, and 19-28 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-4 and 7-10 of copending Application No. 11/658760. Although the conflicting claims are not identical, they are not patentably distinct from each other because:

With regard to claims 1, 11, 19, 13, 28 and 30, claims 1, 3, 6, and 8 of copending application 11/658760 teach a process for a continuous production of a glass frit/enamel composition containing silica by melting granular silica and fluxing agent in the first tank of a furnace comprising at least two tanks in series, each with a submerged burner, where the first tank can run at a temperature of up from 1230-1350°C, the second tank can run at a temperature from 1000-1300°C, and the third tank can run at a temperature from 900-1150°C. Since the temperature ranges for each of the tanks include areas

where the first tank is 80°C hotter than the other tanks, it would have been obvious to one of ordinary skill in the art at the time of the invention to run the tanks such that the first tank was 80°C hotter than the other tanks.

With regard to claims 2 and 20, claim 2 of copending application 11/658760 teaches at least 90% of the silica and at least 90% of the fluxing agent added to the first tank.

With regard to claims 3 and 21, claim 4 of copending application 11/658760 teaches at least 90% of the fluidizing agent added to the second tank.

With regard to claims 7-9 and 24-26, claim 9 of copending application 11/658760 teaches the same glass composition.

With regard to claims 10 and 27, claim 10 of copending application 11/658760 teaches introducing the metal oxide into the second tank.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 2, 19, 20, and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Roberts (US PN 4820328).

With regard to claims 1, 2, 19, 20, and 22, Roberts teaches a process for the continuous preparation of a composition comprising silica (Table 3, Cullet; col. 8, line 2) in a furnace comprising at least two tanks in series (Figure 1, item 5 and 22), said process comprising introducing most of the granular silica (col. 8, line 2) and at least one fluxing agent (col. 7, line 9; Table 3, caustic soda) for the silica into a first tank comprising at least one submerged burner, melting most of the silica in the first tank, and transferring the silica to a second tank comprising at least one submerged burner (col. 9, line 23-46; Figure 1, item 24 and 26, where "electrode" is interpreted to read on the limitation "burner"), wherein the first tank is heated to a higher temperature than the other tank of the furnace and the temperature difference between the first tank and the other tank is at least 80°C (col. 11, line 17-20), the furnace is item 5, the riser is item 12, and the forehearth is item 14 in Figure 1).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 1, 2, 19, 20, and 22 are in the alternative rejected under 35 U.S.C. 103(a) as being unpatentable over Keefer (US PN 3170781) in view of Bull (US PN 3203816) and Froberg (US PN 4358304).

With regard to clams 1, 2, 19, 20, and 22, Keefer teaches a process for the continuous preparation of a composition comprising silica in a furnace comprising at least two tanks in series (figure 1, item 11 and 13), said process comprising introducing most of the granular silica (col. 3, line 42, cullet) into a first tank comprising at least one submerged burner (figure 1, item 19), melting most of the silica in the first tank (col. 2, line 17-20), and transferring the silica (figure 1, item 12) to a second tank comprising at least one submerged burner (figure 1, item 21).

Keefer does not explicitly disclose the addition of a fluxing agent to the first tank or that the first tank is heated to a higher temperature than the other tank(s) of the furnace and the temperature difference between the first tank and the other tanks is at least 80°C. However, Keefer does teach that the first tank is a melting tank, the second tank is a refining tank (col. 3, line 37-38), and that the second tank can have a lower temperature than the first tank (col. 3, line 27-35).

Bull teaches that it was known in the art at the time of the invention to include a soda ash ($NaCO_3$) fluxing agent, the same fluxing agent as disclosed by Applicant (Specification, page 6, line 29), with the initial molten stage of the melt (col. 3, line 10). Bull further teaches that the refining temperature is at least 80°C lower than the melting temperature.

It would have been obvious to one of ordinary skill in the art at the time of the invention to operate the melting and refining tanks in the teaching of Keefer at the temperatures in the teaching of Bull. The rationale to do so would have been the motivation provided by the teaching of Bull, that to use such temperature differences predictably results in the formation of a successful glass composition (col. 3, line 40-46). Furthermore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the fluxing agent in the teaching of Bull in the melt in the teaching of Keefer. The rationale to do so would have been the motivation provided by the teaching of Froberg, that to add a soda fluxing agent to the initial melt predictably results in the formation of an initial molten stage that hastens the dissolving of the silica and/or silicates (Froberg, col. 1, line 19-21).

Although Keefer in view of Bull and Froberg does not explicitly disclose the addition of 90% of the silica and 90% of the fluxing agent to the first tank, since Keefer teaches 100% of the silica added to the first tank for melting (Keefer, col. 2, line 24-27) and Bull teaches the fluxing agent added with the silica (Bull, col. 3, line 10), it would have been obvious to one of ordinary skill in the art at the time of the invention that in order to obtain an initial molten state where the enhanced dissolution of the silica and/or

silicates is to be achieved, that the material to be dissolved (silica) and the equivalent amount of the material required to hasten the dissolution (soda fluxing agent) would have intrinsically been included in the first tank containing the initial melt.

9. Claims 3, 10, 21, 27, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Keefer (US PN 3170781) in view of Bull (US PN 3203816) and Froberg (US PN 4358304), as applied for claims 1, 2, 19, 20, and 22 above, and in further view of Kunkle (US PN 4632687).

With regard to claims 3, 10, 21, and 27, although Keefer in view of Bull and Froberg does teach the addition of the thinner (Froberg, col. 3, line 11, B_2O_3) claimed by Applicant (Specification, page 6, line 31), Keefer in view of Bull and Froberg does not explicitly disclose the addition of at least 90% of a thinner into the second tank.

Kunkle teaches that it was known in the art at the time of the invention to add compositional modifiers during the refining stage (Kunkle, col. 9, line 23-26).

Since the refining stage in the teaching of Kunkle correlates with the second tank refining stage in the teaching of Keefer in view of Bull and Froberg (Keefer, col. 2, line 21-22), it would have been obvious to one of ordinary skill in the art at the time of the invention to add any compositional modifiers to the second tank in the teaching of Keefer in view of Bull and Froberg.

Froberg teaches that materials such as borates are used to provide the final glass product with sufficiently low solubility in water (col. 1, line 31-32), and thus improved weathering properties, in order to offset the high solubility of the glass when

soda alone is used (col. 1, line 23-26). Furthermore, Bull teaches that metal oxides provide color to the glass (col. 1, line 10-13). Since the borate in the teaching of Froberg and the metal oxide in the teaching of Bull act as compositional modifiers, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the borate and metal oxide materials during the refining stage of the second tank in the teaching of Keefer.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the method of Kunkle in the method of melting glass in the teaching of Keefer in view of Bull and Froberg. The rationale to do so would have been the motivation provided by the teaching of Kunkle, that to add a compositional modifier to the refining stage predictably results in the formation of glass melts with well mixed compositions that maintain a great flexibility for making a wide variety of products (col. 9, line 23-27).

With regard to claim 31, Keefer in view of Bull and Froberg teaches two tanks in series, each tank comprises at least one submerged burner (Keefer, figure 1, item 11, 13, 19, 21), the first tank being a melt furnace (Keefer, col. 2, line 17-20) and the second tank being a refining tank (Keefer, col. 2, line 36).

Keefer in view of Bull and Froberg do not explicitly teach 3 tanks in series and each tank comprising at least one submerged burner.

Kunkle teaches that a refining zone (col. 4, line 24-26; figure 1, item 11) with two tanks in series (figure 1, item 50, 52) each comprising at least one submerged burner (figure 1, item 57 and 58) was known in the art at the time of the invention.

Since a melting tank in series with a refining zone was known in the teaching of Keefer in view of Bull and Froberg, and since a refining zone with two tanks in series was known from the teaching of Kunkle, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the refining zone in the teaching of Kunkle with the melting tank in the teaching of Keefer and create three tanks in series comprising a melting tank and two refining tanks, each with a submerged burner. The rationale to do so would have been the motivation provided by the teaching of Kunkle, that to have a refining zone with two burners predictably results in the successful homogeneous re-oxidation of the glass product within an adequate residence time (Kunkle, col. 10, line 15-23).

10. Claims 6 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Keefer (US PN 3170781) in view of Bull (US PN 3203816) and Froberg (US PN 4358304), as applied for claims 1, 2, 19, 20, and 22 above, and in further view of Tiilikka (US PN 4427429).

With regard to claims 6 and 23, although Keefer in view of Bull and Froberg teach that melting temperatures for the first tank of 1315°C were known in the art at the time of the invention (Keefer, col. 3, line 41), Keefer in view of Bull and Froberg does not explicitly disclose the second tank operating at a temperature of at most 1150°C.

Tiilikka teaches that it was known in the art at the time of the invention that temperature reductions of 1350°C to 1100°C in glass melts were known in the art at the time of the invention (col. 3, line 34-40).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the temperatures in the teaching of Tiilikka as the temperatures in the teaching of Keefer in view of Bull and Froberg. The rationale to do so would have been the motivation provided by the teaching of Tiilikka, that to use such temperatures predictably results in the ability to form opalescent colored glass (col. 3, line 1-5).

5. Claims 7- 9, 13, 24-26, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Keefer (US PN 3170781) in view of Bull (US PN 3203816) and Froberg (US PN 4358304), as applied for claims 1, 2, 19, 20, and 22 above, and in further view of Coffeen (US PN 2492523).

With regard to claims 7-9 and 24-26, although Keefer in view of Bull and Froberg teaches a glass with 40-70 wt% SiO2 (Bull, Table 2, item SiO_2) and 3 to 20% by weight of at least one additional metal oxide (Bull, col. 2, line 63-64; Table 2, item R_2O_3 – chromium, iron; Table 2, item CuO), Keefer in view of Bull and Froberg does not explicitly disclose a frit with a composition of 5-15 wt% B_2O_3.

It would have been obvious to use the glass composition in the teaching of Bull in the method in the teaching of Keefer in view of Bull and Froberg. The rationale to do so would have been the motivation provided by the teaching of Bull, that to use such a

composition predictably results in the successful formation of a colored glass (col. 1, line 9).

Coffeen teaches a frit (col. 1, line 44) composition with 3-12 wt% B_2O_3 (col. 2, line 1-10).

It would have been obvious to one of ordinary skill at the time of the invention to use the composition in the teaching of Coffeen in the method in the teaching of Keefer in view of Bull and Froberg. The rationale to do so would have been the motivation provided by the teaching of Coffeen, that to use the composition taught by Coffeen predictably results in the increased acid-resistance and workability of the frit (col. 1, line 1-8).

With regard to claims 13 and 30, although Keefer in view of Bull and Froberg teach a colored glass product (col. 1, line 9-10), Keefer in view of Bull and Froberg does not explicitly disclose a color frit, a tile frit, or enamel.

Coffeen teaches enamel (title).

It would have been obvious to one of ordinary skill in the art at the time of the invention to create enamel as in the teaching of Coffeen using the method of Keefer in view of Bull and Froberg. The rational to do so would have been the motivation provided by the teaching of Coffeen, that to create such enamel predictably results in the formation of acid resistant surfaces (col. 1, line 1-5; col. 4, line 1-2).

6. Claims 11,12, 28, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Keefer (US PN 3170781) in view of Bull (US PN 3203816), Froberg (US PN 4358304), and Kunkle (US PN 4632687), as applied for claims 1-3, 10, 19-21, and 27 above, and in further view of Tiilikka (US PN 4427429) and Ritze (US PN 4106946).

With regard to claims 11 and 28, although Keefer in view of Bull and Froberg teach that melting temperatures for the first tank of 1315°C were known in the art at the time of the invention (Keefer, col. 3, line 41), Keefer in view of Bull and Froberg does not explicitly disclose the second tank operating at a temperature of at most 1150°C.

Tiilikka teaches that it was known in the art at the time of the invention that temperature reductions of 1350°C to 1100°C in glass melts were known in the art at the time of the invention (col. 3, line 34-40).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the temperatures in the teaching of Tiilikka as the temperatures in the teaching of Keefer in view of Bull and Froberg. The rationale to do so would have been the motivation provided by the teaching of Tiilikka, that to use such temperatures predictably results in the ability to form opalescent colored glass (col. 3, line 1-5).

Keefer in view of Bull, Froberg, Kunkle, and Tiilikka does not explicitly disclose a third tank operating from 900-1000°C.

Ritze teaches that a suitable temperature range for homogenizing a glass composition meeting all of applicant's recited limitations (col. 2, line 10-23) after the

glass composition is melted and refined (col. 3, line 1-6) is from 950 to 1150°C (col. 3, line 3-8).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the homogenizing temperature in the teaching of Ritze after the melting and refining stages in the teaching of Keefer in view of Bull, Froberg, Kunkle, and Tiilikka. The rationale to do so would have been the motivation provided by the teaching of Ritze, that to use such a temperature difference predictably results in the formation thoroughly homogenized high optical quality glass (col. 3, line 7-10).

Furthermore, Ritze teaches that it was known in the art at the time of the invention that the operating temperatures of the melt process is a result effective variable dependent on the glass composition (col. 2, line 64-65). It would have been obvious to one of ordinary skill in the art at the time of the invention to operate the three tanks at temperatures that optimized the quality of any particular glass melt.

With regard to claims 12 and 29, Keefer in view of Bull, Froberg, Kunkle, Tiilikka, and Ritze teaches re-oxidation occurs in two sequential tanks (Kunkle, figure 1, chambers 2 and 3), defined as the refining stage (Kunkle, col. 10, line 15-23). While not explicitly teaching that the third tank has a sufficiently oxidizing flame for the oxidation state of the oxide to be raised on going from the second to the third tank, since Kunkle teaches that the re-oxidation occurs by flowing the glass through both of the two sequential tanks, the flame in the third tank must have intrinsically been sufficiently

oxidizing for the oxidation state of the oxide to be raised on going from the second to the third tank, as would be required to achieve the successfully re-oxidized product.

Response to Arguments

11. Applicant's arguments with respect to claims 1-3, 6-13, and 19-31 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Eirich (US PN 3760051): caustic soda is a component of a fluxing agent.

Mambourg (US PN 1596058): running the melting tank higher than the rest of the tanks saves on wear with regard to the rest of the tanks.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elizabeth Royston whose telephone number is 571-270-7654. The examiner can normally be reached on M-Th 8:00am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on (571) 272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/E. R./
Examiner, Art Unit 1791

/Christina Johnson/
Supervisory Patent Examiner, Art Unit 1791